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ABSTRACT

Slides of great modern art works by Picasso, Mondrian, and Van Gogh were selected as stimulus materials for an art test administered to a heterogeneous group of 395 college students. The slides were endorsed for desirability, and the results were factor analyzed. Scales of items with similar levels of endorsement from different factor scales were placed in a paired-comparison forced choice task and administered to college men. Attempts to validate the test across a wide variety of tasks, such as divergent thinking tests and personality tests, met with marginal success. The development and utilization of a free choice form of the art preference test with the same pictures as stimuli and with similar samples of men taking some of the same tasks as were completed by groups along with the forced choice form produced a greater number and greater magnitudes of significant correlations. Each of the art scale subtests did not conclusively constitute the analogue for each of the cognitive styles as hypothesized, but the instruments seem a viable entree into the study of the relationship of art preference and personality. [Not available in hard copy due to marginal legibility of original document.] (Author/MF)

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Artistic Preferences, Conceptual Thinking and Intellectual Attitudes

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SUMMARY

Slides of great works of modern art were selected as stimulus materials for an art test. The works were primarily those of Picasso in each of his periods with additional works of Mondrian and Van Gogh. The items were endorsed by a heterogeneous population of college students (N=395) for desirability (i.e. liked or disliked). The results were factor analyzed. Scales of items with similar levels of endorsement from different factor scales were placed in a paired comparison type of forced choice task and administered to college men. Attempts to validate the test across a wide variety of tasks including divergent thinking tests, cognitive style measures, personality tests (HIT, OPI, PRF, Harvey's Conceptual Systems Test) and ability measures met with marginal success. The development and utilization of a free choice form of the art preference test with the same pictures as stimuli and with similar samples of men taking some of the same tasks as were completed by groups along with the forced choice form produced a greater number of significant correlations and greater magnitudes for the correlations.

It could not be concluded that each of the art scale subtests constituted the analogue for each of the cognitive styles as hypothesized, but the instruments seem a viable entree into the study of the relationship of art preference and personality.

CHAPTER I

INTRODUCTION

It is a central theme of current thinking that creativity, innovation, divergent thinking, or just openmindedness, represents the product of individual differences in cognitive style (Klein 1949, Gardner, Holzman, Klein, Linton, Spence 1959), perceptual style (Barron 1952), or intellectual organization (Gardner, Jackson, Messick 1960). Since the creative process is dependent, at least in part, upon an interest in new ideas and a tolerance for new representations of familiar objects, it may be that the personality organization of the individual operates to influence the preferences people have for art works. These works may vary in the directness with which they convey the ideas embodied within them. The persistence required of a subject to find the meaning embedded in a complex or abstract representation of an idea may be indicative of characteristics which distinguish the analytic student from the conforming student, and the creative from the pedantic.

Individual differences in the likes and dislikes people have towards the form or style in which information is conveyed to them in paintings or other media may reasonably be expected to influence their acceptance or rejection of an idea. It is likewise true that a certain tolerance for differences is necessary for creative thought. This "regression in service of the ego", which may be marked in peoples' attitudes towards modern art forms, may more subtly manifest itself in the styles people employ in more commonplace acts of thinking and perceiving, such as are involved in the measures of cognitive styles. The relationship between art preferences and cognitive styles may represent a common product of training, personality and cognitive attributes which influence students' attitudes towards new ideas; towards differences in the type of information they retain; the manner in which they retain the information; and the value they place upon new information, ideas, or unusual thoughts.

The art test is seen as a new tool for categorizing the differences which exist in people as a result of habits of selective attention and conceptual organization. In this research the use of artworks is hypothesized to operate at what psychoanalysts would call the preconscious level of stimulation. In dream studies (Fisher and Paul 1959) and subliminal perception studies (Spence 1962); and most recently, studies of peremptory ideation (Klein 1967) there have been extensive suggestions that the personal perceptual or symbolic significance of the artistic form can be responded to by an onlooker with a compatible pattern of conceptual or cognitive style. Klein states, "By affectively resonating with the motivating fantasy of an artist, a formal product that gives to the onlooker a freshened awareness of a reality hitherto obscured by his progmatically habituated schemata may come to life through transformations of color, texture, depth, and pattern."

The use of both verbal and performance measures of personality provides some variation in the content of the criterion measures to prevent what Cattell has called instrumental variables, from indicating relationships based on the use of only questionaire type, verbal instruments employed rather than the hypothesized multi-modality constructs under study.

These patterns of response (called cognitive control principles or cognitive styles by Klein) have been tied to the motivational characteristics of the person and particularly to the reality testing level of the personality. These styles are derived from simple perceptual and psychophysical judgments but have been shown to be stable and to have useful relationships to both the defensive and conflict-free spheres of personality organization.

In theoretical terms the cognitive styles may be considered perceptual attitudes which underlie an individual's interaction with any new intellectual tasks (Guilford 1967). As attitudes they appear to represent the broadest possible set of measurable constructs available for the investigation of perceptual-cognitive tasks. Of special interest is the relationship between the cognitive control principle designated, tolerance for unrealistic experiences and the preference for modern artworks. It may be hypothesized that this may be the "master control principle" underlying whether a person can accept and develop a liking for good non-representational, abstract or impressionistic styles and the other control principles determine differences within the tolerant and intolerant groups of subjects.

The validation of the art test includes many measures of putative relation to personal differences in cognitive style and artistic preference was warranted.

The psychological significance of a preference for modern art in all or any of its forms is that it may indicate an openness to looking at old or familiar ideas in a new way. Modern art may be construed as an attempt by the artist to communicate with the beholder in a fashion which distorts or accentuates some special characteristic of an object or scene. It is by an accentuation of a commonplace detail that the artist is creative in seeing something of special significance in a stereotyped scene. This technique of distorting the obvious or commonplace is essential if the artist is to communicate some new insight to a perceiver accustomed to responding to familiar cues in a stereotyped fashion. It is a sequela of this postulation that some people, particularly artists and other creative people, utilize perceptual and cognitive strategies which differ from the typical. Therefore, for the new awareness of the artist to be communicated to the public, the receiving public must be willing or capable of decoding the message of the artist in his idiosyncratic format. The degree of distortion of the artwork will presumably interact with the tolerance level of the receiver to produce a willingness to contemplate the artist's product or to reject considering the product at all.

The literature dealing with art in psychology goes back to such tough-minded theorists as Pavlov (1960), who believed differences in artistic and literary types was a function of the CNS. However, contemporary use of artworks as psychological tools has usually focused its attention on creativity, and aesthetic preferences. Of interest in the literature on creativity, summarized in part by Golann (1963), is the frequent finding that differences in motivational, and particularly stylistic differences, rather than intellectual traits, distinguish the creative person from his contemporaries. Barron drew upon the earlier work of Burt (1933) and Eysenck (1940, 1941), which had employed artworks of multitudinous authors and had evaluated the free preferences of their subjects. This left uncontrolled, the type and quality of painting, as well as the style of the artist. This procedure also failed to control for a general tendency to express like or dislike for paintings, and was probably plagued by low reliabilities of measurement, using scores based upon single items.

Barron (1963) has shown that artists differ from non-artists in their preference for complex compositions and for asymetrical figures. This resulted in the artists as a group expressing greater interest in and tolerance for innovating sensual and non-representational art forms. Eysenck concluded that there was a general factor of estheticism which was randomly distributed through the population. When the influence of the t factor of esthetic preference was removed, the remaining influence was described as a bi-polar personality factor precursing Barron's simple-complex dimension. The most recent venture in this area is Child's (1965) studies of esthetic competence which compares expert and lay judgments both within and across cultures. Child found evidence for a general esthetic factor and for the influence of artistic background and training and for the influence of cognitive styles. McWhinnie (1968) summarized the research on esthetic preferences and concluded that despite the general variance of Eysenck's t factor, perceptual training was effective and suggested the need to explore the effects of various cognitive styles on esthetic preference.

The research cited so far has alluded to selected and circumscribed cognitive styles such as complexity-simplicity and symetry-asymetry. The study of cognitive styles by Klein, Gardner and Witkin, has greatly increased the sophistication necessary to isolate and measure cognitive styles. Klein [1] in particular has extrapolated from psychophysical measures of cognitive styles to theoretical correlates in paintings. The use of a wide variety of paintings to represent a broader spectrum of cognitive styles should extend the work on esthetics beyond research presently available.

This study, therefore, attempted to (1) start from the past literature, (2) select a relevant theoretical frame work (i.e. cognitive styles) for the selection of materials for creating a new and comprehensive art test, (3) validate the test against a mute modality, broad spectrum, base of concurrently appropriate measures, and (4) integrate the findings and evaluate the end product of the research to develop a multi-dimension test of artistic preferences.

1. Personal letter to Riley W. Gardner and made available by the latter author for use in conceptualizing this study.

CHAPTER II

METHOD FOR THE CONSTRUCTION AND VALIDATION OF THE ART PREFERENCE TEST

The rationale and steps appropriate to building the art test proceed from the following concise description by Jackson (1967) of test validation procedures for the Personality Research Form.

Substantive Definition of Variables

"The central guiding principle in the development of the PRF was that the validational process should be integrated with the entire program of test construction, rather than being something tacked on when the test is in final form. This point of view has been ably expressed in Loevinger's (1957) classic monograph. Loevinger suggests that the validational procedure can be divided into substantive, structural, and external components. Each of these components is a necessary stage in test development, but no one is sufficient in itself. Ordinarily, there should be an orderly progression from one stage to the next, according to Loevinger. The substantive component of validity refers to the degree to which the items comprising a test reflect on theoretical grounds an appropriate universe of content. Such a formulation bears important similarities to certain conceptions of other theorists, particularly to the hypothetical latent continuum described by Green (1954), to Lennon's (1956) formulation of content validity, and to the theory of generalizability of Cronbach, Rajaratnam, and Gleser (1963). But nowhere is there a more explicit statement on the importance of substantive considerations in test construction than in Loevinger's monograph. The Structural component requires that the investigator make explicit, prior to data gathering, a structural model to which he expects item responses to conform. For example, he might expect his test to conform to a homogeneity model, as exemplified by high estimates of internal consistency reliability. The external component of validity refers to the degree to which test variables correspond to non-test manifestations of the trait. One important characteristic of this correspondence is that ideally it should be highly selective. Thus, an affiliation scale should correspond substantially more closely to traits believed to reflect affiliation than those which do not (cf. Campbell and Fiske, 1959). If this condition is met, the test may be said to possess both convergent and discriminant validity."

(p.12)

Thus the first step in selecting the material for the art test was finding a theoretical basis on which to select or reject a slide of a given painting. This presumed that enough pictures in high quality color slides would be available. The theoretical frame work was that of Klein and Gardner which posited a series of relatively discrete cognitive styles, which operated across sensory modalities and represented the autonomous functioning of the ego. As adaptive rather than conflict

laden structures, the cognitive styles framework was appropriate to the creative and awareness expanding purposes underlying the artworks to be selective.

To achieve the purpose of this study it was necessary that only works of art which embody an artist's personal and conceptual idiosyncracies within their expressive style, be utilized. It was natural to turn to Picasso, who is such a prolific and innovative artist and who has developed a great many styles which could be utilized as analogues of cognitive styles. In addition, it was hoped to extend the styles to include the works of Van Gogh and Mondrian. In practice, it became necessary to select a few works of other artists (ref. Appendix A). The limitation of a style to one painter enabled the selection of pictures to be consistent within the theoretical framework underlying the operation of cognitive styles.

This could not be observed in all cases, but where works by other painters were similar and produced high factor loadings on the same scale, they were included in the scale. Slides were selected from commercial slide libraries, but where there was not adequate numbers of slides to permit at least fifteen slides for each initial scale (hoping for at least ten items in the final scale), other sources were sought. The later included copying slides from printed plates in books.

The initial sample of slides was presented to a large number (N=395) of college students, primarily in general psychology and education classes, but other classes where cooperation was offered, were accepted in the early stage of establishing the levels of preference for each picture. Subjects were drawn from public and private colleges and universities in Indiana and New York. Private colleges were both church-related and independent and the sample included men and women. The heterogeniety of the sample proved disadvantageous in that it produced adverse effects on both the reliability of the final scales and the stability of the factors across validation groups. The internal validity for each subscale was based on a factor analysis of the initial sample of endorsements.

The validation studies were completed on the men from the Notre Dame (Indiana) Campus. The greatest number of students were freshmen but approximately one-third were upperclassmen participating for credit as part of the requirements of general psychology.

The architectural students were freshmen who were requested to participate at the conclusion of a freshmen orientation lecture.

Note: An extended description of the methods utilized are reported in Appendixes B, C, and D.

CHAPTER III

RESULTS

The results of the study can be reported in two sections. The first section will deal with the internal validity of the test and the second section to deal with the concurrent or external validity.

Despite highly promising results, based on the factor analysis of the early forms of the art test (see Appendix B), the final form showed high intercorrelations between many of the art test subscales. To accomodate the capacity of the computer program, the art test was run as if it were really two tests of five subscales each. The intercorrelations are shown in Table VII (Appendix F). In both sets of subscales only one scale seemed to show a relative freedom from interdependence with the other art scales (i.e. 1A, 1D). The effect of the high intercorrelations is to attenuate any hope of differential assessment by subscales. In part, the problem of high intercorrelation is a dilemma produced by the design of the study. In selecting art works for the study, one criterion was the clarity with which an item conveyed itself as an instrumentality of a given cognitive style. This procedure does not lend itself to the usual psychometric desire for a gradient of more modest differential capacity. The result appears to have produced a contrast effect which degenerates into the large general factor found in earlier research which bears upon the degree of clarity, familiarity and freedom from bizarreness of each picture.

A further difficulty associated with the use of the forced choice option is the problem of ipsatization. This problem has been discussed comprehensively by Clemans (1966). The basic problem of ipsative measurement is that the results reflect intra-individual evaluations, rather than inter-individual evaluations. Much of the research reported here and in the data tables in the appendix are the results of work completed with the forced choice form of the art preference test. It was possible however, to develop a free choice form of the same test and to validate the results against some similar variables used to validate the forced choice form of the same scale. The striking results reported in Table IX offer a comparison with the results of the forced choice format reported in Table I, especially for the Barron-Welsh Figure Preference Test (B/FPT) in which only the revised art scale was used. The few comparisons available strongly suggest that future validation studies will probably be most productive if the free choice form is used despite the obvious limitations and extraneous influence due to testing artifacts.

The reliabilities of each form of the art test seem acceptable yet range from .56 to .83 with a median reliability of .66. In part, the relatively low reliabilities may be due to the brevity of the scales. The expectation is that longer scales would yield even higher reliabilities.

The external validation of the art preference scales began with a series of hypotheses and the support or non-support of the hypotheses. The hypotheses and general conclusions about their sustenance are found in Table 10 on the next page.

Most of the validation studies were conducted with the forced choice format. The results appear in Tables I to V. In Table I negligible relationships are found in several of Guilford's tests of divergent thinking; the cognitive style of conceptual differentiation as measured by the object sorting test; Barron's ego strength scale; and the revised art scale of the Barron-Welsh figure preference test. Several low correlations were found with items selected from the Oberlin test of art. Bieri's adaptation of Kelly's Rep test showed little correlation between the art test and complexity, while of the omnibus personality subscales, the esthetic and thinking introversion scales showed appreciable correlations. This selective validity indicated some support for the premise underlying the use of pictures for the development of a test. Both of the Scholastic Achievement Test Scores (C.E.E.B.) verbal and quantatative, produced low, and interestingly enough, negative correlations with many of the art test subscales; a curious but significant finding. The dogmatism and opinionation scales of Rokeach, and Budner's scale of the tolerance or intolerance of ambiquity cognitive style showed negligible relationships to the art test.

In Table II Guilford's Possible Jobs Test showed several low correlations as did the art test with the Concealed Figures Test, a measure of the cognitive style of field-articulation. The use of the color word as a measure of the cognitive style of constructed or flexible control revealed somewhat more correlations with the reading colors section of the measure than with the interference section which is the criterion measure of the cognitive control principle. Interestingly enough, the size estimation test, a criterion measure of the cognitive style called Focussing-Scanning, revealed several differentiating correlations as did the error and lag scores of the cognitive style called Leveling and Sharpening.

In Table I two aspects should be noted. The first is that despite the high intercorrelations of the subscales, there is a great amount of differentiation in the correlation of the art scales with each of the criterion or validation measures. Secondly, while it was plausible and justified to hypothesize the expected direction of each correlation, a procedure which clearly justified the use of one tailed tests the more stringent level of significance was utilized. This latter point may help to clarify the state of the many correlations which barely miss being significant at least at the five percent level.

Table III reports the correlation of the forced choice art preference test with the revised art scale and Holland's test of preconscious thought. The students were freshmen and the premise of the later findings utilizing Holland's scale of evidence in this table.

Table 10

Hypotheses	Results
1. Subjects high on dogmatism will show greater preference for veridical painting.	Not supported
2. Subjects high on dogmatism and creativity (divergent thinking) will show greater preference for abstract art with symmetrical geometric configurations, particularly when they are "balanced".	Not supported
3. Subjects high on openmindedness and creativity will show the highest preference for art forms with least veridical content or geometrical formats (e.g. surrealism, impressionism, etc.).	Not supported
4. When the artistic desirability of each painting is held constant (by using different styles of the same artist, e.g. Picasso, equated for endorsement as liked or disliked), the choices of the subjects will be correlated with their choices on an adjective preference scale for such qualities as simplicity-complexity, etc.	Supported for esthetic and thinking introversion scales of the OPI
5. There will be no differences in art preferences attributable to intelligence test scores.	Not supported See Table I
6. The art preference test subscales will constitute analogues of Klein & Gardner's cognitive styles measures. This will be indicated by correlation coefficients between the intercorrelation tables of cognitive styles measures and art preference test subscales.	Modest support (See Text)
7. The more abstract and conceptually oriented the person is, the greater will be his tolerance for varied styles of artistic expression.	Supported by H.I.T. Scores but not C.S.T. Scores
8. That those subjects who show an increase in tolerance for more representational paintings upon retesting will have the more flexible, conceptual and openminded traits.	Not supported

Table IV reports the correlations of the art test with the computer scored results of the Holtzman Inkblot Test. The H.I.T. variables showing the greatest number of correlations in descending order are color, shading, abstraction, popularity, hostility and anxiety — a truly mixed assortment. The correlations of color, shading, abstraction and popularity seem consistent with the nature of art preference and the pictures of the art test; however the role of anxiety and hostility is not clear.

Table V finds more support for the relationship of art preference to cognitive styles. In this larger sample there are a greater number of significant correlations with Gough's rigidity scale and a repeat of Budner's tolerance or intolerance for ambiguity. Conceptual differentiation as measured by the object sorting test reveals a modest number of correlations once again. The Personality Research Form did not produce a great number of correlations, yet appropriately enough, the sentience scale showed some correlations of significant magnitude but the scale of cognitive structure produced only one marginal correlation to note.

The forced choice form of the art preference scale, despite its high intercorrelation, did not produce consistent correlations under conditions where possible equivalence should have produced such results. It is difficult to decide if the lack of consistent correlation across related scales is due to the ipsative nature of the scales, the heterogeniety of the base population from which the factor analysis was drawn or to a truly differentiating character of the scales. This problem will be discussed in the next chapter.

The free choice form of the art preference test revealed few relationships with any of the subscales of Harvey's Objective Test of Conceptual Styles (Table VI). It was hoped that the abstractness scale would be informative but the correlations were not forthcoming.

Tables VIII and IX are highly informative. On these tables, correlations between the free choice form of the art preference test are correlated with measures which were earlier correlated with the forced choice format with students from other samples. The results are not only striking with regard to the magnitude of their relationship with the concealed figures tests and color-word test (measures of the cognitive styles of field articulation and constructed flexible control) but also because of the larger number of subjects utilized in the free choice samples. For each of the previously reported measures and the A.C.E. test of Critical Thinking both the magnitude, frequency and selectivity (i.e. not uniform across all subscales of the art test) of the relationships are striking.

CHAPTER IV.

CONCLUSIONS AND RECOMMENDATIONS

The technical difficulties associated with developing a test utilizing art works on slides as stimulus items were several. Items which were identified by factor analysis to represent independent categories based on the statistical analysis provided several highly correlated scales in the final forms of the art tests. There may be two explanations for this turn of events. The effect of the general factor of esthetic preference, as an overriding influence on the art discriminations, may have been to subvert the influence of the relatively subtle cognitive styles inherent in the pictures. Another possibility is that by employing pictures, which clearly represent a style of modern art, it was not possible to develop a sufficient gradient of difficulty to gain the desired comparability of art works. It is of value to note that despite the high intercorrelations of some of the art scales, the occurrence of significant correlations was not uniform but was more selective. It would be desirable from some points of view to have greater independence of scales. It does not seem possible within any design which seeks to limit the number of artists used as a source of the pictures. Further research may be able to diminish some of the overlap by using a statistical procedure to partial out any possible general factor which may be operating.

The internal consistency of the scales seems acceptable for most uses. Reliability coefficients were computed for the forced choice form only, but it seems likely that the free choice form would be at least as reliable. It would be desirable to establish temporal reliability by a test-retest procedure but that was not possible in this study.

The study was originally based on the premise that a forced-choice format utilizing items paired for rated endorsement of desirability (i.e liked or disliked) would be the most effective vehicle for an instrument of this type. Much of the cumbersome work in the early stages of the study was devoted to the technical problems of selecting, rating, pairing and trying out pictures to be utilized in the study. Following the test development stage, the art test in forced choice form was given to college students in conjunction with the measures of cognitive style and personality measures among several others. Since many cognitive style principles must be derived from time consuming individual test sessions, there was some lag in finding the hypothesized relationships and further that few correlations were forthcoming between the art scales and other measures. It seems likely that the heterogeniety of the original standardization process, particularly the mixture of men and women's results, led to unstable relations in the subscales insofar as the purity of the cognitive style was concerned.

Of greater moment was the utilization of the forced choice format as the vehicle for the art test. While avoiding response bias, desir-

ability and other artifacts, it became apparent that the ipsative pitfall could not be overcome in the correlation table. This conjecture was verified when a free choice format was constructed and new groups similar to that used to validate the forced choice format were given the new form and several related tests. The increase in both the frequency of significant correlations and the magnitude of the correlations, despite larger number of subjects, seemed to redeem some of the promise for the art test lost in the validation of the forced choice test. While it was not possible within this study to replicate all the measures used earlier, there does seem to be the promise in the free choice format that was originally held for the forced choice test.

In conclusion, a relatively useful design for the study of art preferences has evolved from this research. There is the need for creating scales with increased independence. The use of free choice items which permit the use of item analysis techniques should provide scales which are more independent. It seems useful to attempt to identify the influence of general factors or moderator variables which contribute to the overlap of scales and to eliminate these statistically. The validation of the final form against concurrent measures, criterion groups selected for viable characteristics and the comparison of the scales employed in this test with homogeneous scales of other arts, would complete this cycle of studies.

The hypothesized relationship of art preference to many social attitudes could not be sustained. This finding may question some of the generality of attributes accorded the authoritarian personality, dogmatism and other attitudes. There does appear support for a broad general trait found previously in the literature by several authors that relates to a preference for representational or non-representational art. The art test subscales do not seem to constitute the analogue to cognitive styles as was hypothesized. In part, this seems due to the scale overlap. However, it does not appear likely that either form of the test will produce the factor analyzed loadings on the same factor as the measures of the cognitive style measures.

Appendix A

Slide Number	Factor	Factor Loading	Artist	Title	Year
1.	1B	22	Picasso	Harlequin and Bay	1905
2.	1B	19	Mondrian	Broadway Boogie Woogie	1942-'3
3.	1A	46	Picasso	The Gourmet	1901
4.	1A	56	Picasso	The Bathers	
* 5.	1A	60	Picasso	Old Guitarist	1903
6.	1A	35	Picasso	Pink Torso	1906
7.	1A	45	Picasso	Acrobats with a Dog	1905
8.	2C	31	Picasso	Woman in Chemise	
9.	2B	21	Picasso	Woman's Head	1901
10.	1A	61	Picasso	Harlequin's Family w. Monkey	1905
*11.	2D	30	Picasso	Boy Leading A Horse	1905
12.			Van Gogh	Church at Auvers	1890
13.	2B	42	Picasso		
*14.	2E	69	Picasso	Woman in Blue	1902
*15.	1E	40	Picasso		
16.	1B	50	Picasso	Guitar and Chemise	1915
17.	1E	29	Picasso	Ma Jolie	1914
18.	2B	23	Unknown		
*19.	2E	78	Picasso	Still Life with Antique Head	1925
*20.	2E	73	Picasso	The Schoolgirl	1919
21.	1E	44	Picasso	Still Life with Guitar and Grapes	1923
22.	2D	34	Picasso	Violin	1913
23.	1D	31	Picasso	Harlequin	1915
*24.	2D	36	Picasso		
*25.	2D	58	Picasso	Boy With a Cock	
26.	2C	36	Picasso	The Table	1919
27.	2D	32	Picasso	Still Life with Cake	1924
*28.	2D	69	Picasso	Man Smoking	1914
*29.	2D	69	Picasso	Three Musicians	1921
*30.	2D	55	Picasso	Green Still Life	1914
*31	1C	49	Picasso	The Lovers	1923
32.	2D	54	Picasso	Women at Fountain	1920
33.	2B	43	Picasso	Harlequin Seated	1923
*34.	2D	35	Picasso	Pierrot, Artist's Son Paul at 4	1925
35.	1A	51	Picasso	Harlequin, Artist's Son Paul at 3	1924
36.	1B	36	Picasso	Maternity	
37.	_A	56	Picasso	Sleeping Peasants (Gouache)	1919
38.	1A	54	Mondrian	The Dunes	
39.	2A	44	Picasso		

* Utilized in Forced Choice Test

Slide Number	Factor	Factor Loading	Artist	Title	Year
40.	2C	49	Picasso		
41	2B	46	Picasso	Harlequin Seated	1923
*42.	2A	31	Picasso	Woman in White	1923
43.	1A	48	Picasso	Two Nudes	1920
*44.	1C	49	Van Gogh	Sunflower	
45.					
46.	1C	41	Mondrian	Tableau II	1921
47.	1A	56	Mondrian	Tableau I	1921
48.	2B	41	Mondrian	Composition With Red and Black	1936
49.	1D	34	Mondrian	Church Tower at Domburg	1909
*50.	1A	59	Mondrian	Still Life with Gingerpot II	1912
51.	1A	49	Mondrian	Composition in Gray & Blue	1912
52.	1A	55	Mondrian	Composition with Trees	1912
53.	1A	56	Mondrian	Lighthouse at West Kapelle	1910
54.	1A	61	Mondrian	Dune	1910
55.	1A	58	Mondrian	Oval Composition, Trees	1913
56.	1B	34	Mondrian	Composition #3, Trees	1912
*57.	1A	66	Van Gogh	Olive Grove	
*58.	1E	30	Mondrian	Landscape with Farm-house	
59.	1A	51	Mondrian	Horizontal Tree	
60.	2B	42	Van Gogh	The Sea	
61.	1A	57	Mondrian	Composition in Gray	1919
62.	2B	54	Van Gogh	Bridge at Arles	
*63.	1D	35	Van Gogh	The Harvester	
*64.	2B	62	Van Gogh	Self-Portrait with Pipe	
*65.	2B	59	Van Gogh	The Sower	
66.	1A	50	Van Gogh	L'Arlesienne, St. Remy	1890
67.	2A	45	Van Gogh	Landscape with Olive Trees	
*68.	2A	54	Van Gogh	Road with Cypresses	
69.	1A	53	Van Gogh	The Orchard	
*70.	2B	53	Van Gogh	Orchard Springtime	1888
71.	2A	52	Van Gogh	The Sower	1888
72.	2C	43	Picasso		
*73.	1A	58	Van Gogh	Olive Orchard	
74.	2B	43	Van Gogh	Road Menders	1889
75.	1E	28	Van Gogh	Good Samaritan (aft. Delacroix)	1890
*76.	1D	40	Van Gogh	Stairway at Auvers	1890

Slide Number	Factor	Factor Loading	Artist	Title	Year
*77.	1E	60	Mondrian	Composition #14	1914
78.	1C	31	Mondrian	Composition #10, plus and Minus	1915
79.	1E	51	Picasso	Sunbathers	
*80.	1D	54	Picasso		
*81.	1D	50	Ensor	Carnival on the Beach	1887
*82.	1E	57	Ensor	The Shells	1895
83.	2C	42	Ensor	Discarded Boats	1900
*84.	1D	37	Picasso	Owl on a Chair and Sea Urchins	1946
*85.	2C	53	Picasso	Pastoral	1946
*86.	2A	55	Picasso	The Kitchen	1948
*87.	1E	46	Picasso	Portrait of Claude, Artist's son with Hobbyhorse	1949
*88.	2A	50	Picasso	Mediterranean Landscape	1952
*89.	2C	50	Picasso	Smoke of Vallauris	1951
90.	1E	58	Picasso	Woman Seated	1941
91.	1A	59	Picasso	Daughter of Concierge	1947
92.	2C	41	Picasso	Figure	1945
93.	1C	58	Picasso	Still Life	1945
*94.	2B	66	Mondrian	New York City	1942
95.	2B	66	Mondrian	Composition with Red, Yellow and Blue	1921
96.	1A	20	Mondrian	Red Tree	1909
97.	1C	42	Mondrian	Woods Near Oele	1907
98.	2B	54	Mondrian	Mill in Sunlight	1911
99.	1C	46	Mondrian	Composition	1922
100.	1A	40	Mondrian	Composition with Red, Yellow and Blue	1930
101.	2B	56	Mondrian	Oval Composition	1913
*102.	1C	62	Mondrian	Horizontal Tree	
*103.	1C	53	Mondrian	Evening Landscape	1904
*104.	1C	59	Picasso	Two Female Nudes	1906
*105.	2B	70	Picasso	Harlequin Leaning	1909
106.	2B	54	Picasso	Flowers on a Table	1907
107.	2B	62	Picasso	Fruit and Wineglass	1908
108.	2B	47	Picasso	Harlequin and his Family	1908
*109.	1B	51	Picasso	Woman Seated	1909
*110.	2A	60	Picasso	Girl with Mandolin	1910
*111.	1B	57	Picasso	Clarinet Player	1911-12
*112.	1E	59	Picasso	Landscape at Horta de Ebro	1909
*113.	2C	63	Picasso	Nude With a Towel	1907
*114.	2A	61	Picasso	Figure	1910

Slide Number	Factor	Factor Loading	Artist	Title	Year
*115.	1E	49	Picasso	Les Demoiselles d'Avignon	1906-07
*116.	1A	64	Van Gogh	Starry Night	
117.	2A	37	Picasso	Woman Dancing	1907
118.	2A	36	Picasso	Three Seated Figures	1907
119.	2C	41	Picasso	Self-Portrait	
*120.	2A	38	Picasso		
121.	2A	44	Picasso	Still Life With Tube of Paint	1909
122.	2C	39			
123.	2B	37			
*124.	2E	65	Picasso	Still Life with Glass	1942
*125.	2E	59	Picasso	Still Life with Guitar	1937
*126.	1C	55	Picasso	Table Service	1941
127.	2C	64	Picasso	Woman at Mirror	1937
128.	1C	64	Picasso	Bullfight	1934
129.					
130.	2B	51			
131.			Picasso	Still Life with Bull's Head, Book, Palette and Candlestick	1938
132.	1C	65	Picasso	Cat and Bird	1939
133.	2B	49	Picasso	Woman Reclining on Divan	1939
*134.	1B	64	Picasso	Woman on Iron Seat	1937-38
*135.	2C	69	Picasso	Bull and Horse	1934
136.	1B	68	Picasso	Still Life by Candle-light	
*137.	1B	68	Picasso	Weeping Wom	1937
138.	2C	72	Picasso	Young Girl at Mirror	1932
*139.	1B	55	Picasso	On the Beach, Dinard	1928
*140.	2C	67	Picasso	Nude	1932
141.	2C	70	Picasso	Bather, Seated	1929
142.	2C	59	Picasso	Woman with a Flower	1932
143.	1C	32			
144.	2A	45	Picasso	On the Beach, Dinard	1928
145.	1B	67	Picasso	The Studio	1928
*146.	2C	52	Picasso	Nude in Red Armchair	1932
147.	2C	72	Picasso	Circus Family (Water-color)	1905
*148.	1A	47	Picasso		
*149.	1B	56	Picasso		
150.	1B	51	Picasso		
151.			Picasso	Two Nudes	1920
*152.	2C	62	Mondrian	The Farm House	
*153.	2B	59	Picasso		
*154.	2E	35	Picasso	Still Life	
*155.	2B	56	Modigliani	The Grand Nude	

APPENDIX B

The Development of a Forced Choice Measure of Preferences for Modern Art Styles and Validation with Personal Needs [1]

In an effort to circumvent some of the limitations attached to the use of verbal materials to study personality and to clarify some of the characteristics underlying preferences for non-representative art, a test was constructed utilizing different styles of modern art as its content. The modern art scales were based on the research reported earlier (Loveless, 1968) which had identified five factors from among 160 slides of the paintings of Picasso, Mondrian, and Van Gogh. Two sets of 80 slide evaluations were factored independently and five factors emerged from each analysis. The five factors were dubbed structural-realism; primitivism-analytic cubism; synthetic cubism-surrealism; and expressionism after the characteristics of the paintings representing the highest loading on each factor for each set. Paintings from each factor were paired with paintings from each of the four remaining factors according to their similarity of endorsement as being liked or disliked. The paintings were paired within a range of 10 percentage points of endorsement from highest to lowest of each of the five factors and were placed in a paired comparison paradigm. Each group of 5 slides constituted the basis of 10 choice pairs. Twelve sets of 10 paired comparisons were composed and presented to a group of students (N=67). The pairs were alternated so that no similar pairs were presented contigously. Five scores for each of the two groups of six sets of paired comparisons were obtained. The students had previously completed the Personality Research Form (PRF) (Jackson, 1967) and were members of a psychology class completing semester requirements for research participation. The results were then intercorrelated and factor analyzed into their principal components and the factors rotated to a varimax criterion, five scores from set 1 of the forced choice group, five scores from set 2, and 15 scores from the PRF. The results appear in Table 1.

RESULTS

The intercorrelation between the 10 art scales ranged from .02 to .49 with a mean of 20.5 and a standard deviation of 13.4 indicating a general independence of each of the 10 scales. Ten factors were extracted from the varimax program on the basis of the relative independence of the 10 art scales.

The first factor to emerge from the analysis is a complex factor wherein cubism (synthetic) and abstractionism represent the art scales

1 Prepared for submission to division 10, American Psychological Assn.

while five PRF scales load highly on the same factor. The scales of achievement, affiliation, aggression, autonomy and dominance all load negatively on this factor. One apparent suggestion might be that the factor represents a form of intellectualism or tolerance for distortion and non-meaningfulness. Factor V loads moderately (.44) along with needs for order (.64) and social recognition (.85). The realistic expressionism of the art works suggest a high need for conformity is associated with this factor. Factor VII loads on the expressionism from set 1 and the abstract works of set 2 and only a weak relation (-.33) is found with a need for harm avoidance.

The results in general indicate only mild congruence between needs and art preferences since many factors load with only art scales or with personality scales. A question remains whether the forced choice format which results in ipsative measures may not have attenuated the results.

Table I

Factor Analysis Results; Forced Choice Art Scales And Personality Research

Form Scales With Factor Loadings

Art Scales	I	II	III	IV	V	VI	VII	VIII	IX	X
Art IA-expressionistic e.g. old guitarist-Picasso	07	08	08	-15	-03	00	41	16	1[illegible]	67
Art IB-cubism e.g. clarinet player-Picasso	-94	-09	-09	-04	-05	-06	01	04	-00	-08
Art IC-classical e.g. the lovers-Picasso	23	05	06	-18	05	-25	08	29	-20	55
Art ID-expressionism e.g. stairway Auver-Van Gogh	24	-14	06	-68	01	23	-03	11	-02	04
Art IE-abstract e.g. landscape-Picasso	-96	-10	-08	-07	01	-06	-05	-03	-00	01
Art IIA-classical e.g. woman in white-Picasso	-22	-11	-07	-55	23	02	19	41	-16	18
Art IIB-cubism e.g. woman seated-Picasso	28	-11	-14	-18	-00	-10	-10	-13	-06	74
Art IIC-surrealism e.g. smoke at Vallaruris-Picasso	-05	-02	26	-78	-19	-10	-10	-04	14	16
Art IID-realistic/expressionist e.g. Pierrot-Picasso	36	32	04	04	-44	15	04	26	12	07
Art IIE-abstract e.g. woman in blue-Picasso	08	-00	07	00	16	-00	80	07	-01	11
PRF Scales										
Achievement	-91	-03	-10	00	04	19	-03	-04	-01	-01
Affiliation	-79	02	15	01	36	15	-11	-17	-06	00
Aggression	-92	-16	06	03	09	-10	-06	06	-01	-00
Autonomy	-92	-13	-08	03	-14	01	06	00	01	-09
Dominance	-91	-07	01	-01	13	15	-06	07	-02	-09
Endurance	11	12	-28	-04	-06	78	07	-02	08	-14
Exhibition	02	-05	30	-12	26	66	07	-16	02	-08
Harmavoidance	31	-11	-45	05	09	-31	-32	-28	-02	03
Impulsivity	14	00	73	-07	-27	-22	16	-05	-02	-00
Nurturance	27	28	21	02	27	43	-21	16	-15	00
Order	22	-18	-24	-01	63	28	29	-08	18	03
Play	30	03	68	-16	23	09	-12	-05	09	-04
Social Recognition	-11	-01	03	10	84	-03	05	07	-02	-00
Understanding	21	35	-23	04	-22	59	-08	25	-15	01
Infrequency	-00	-06	-06	07	-02	-04	01	-18	-83	06

APPENDIX C

15

Art, Politics, and Sex

The study

PREFERENCE FOR MODERN ART[1]

The results of a recent study at the University of Notre Dame indicate that artistic perception may be a more complex phenomenon than has been previously suspected. Current studies of artwork as psychological tools are continuing. Most of these current studies still employ expert judgments and/or accepted ranking procedures to categorize art on a given dimension. These procedures result in a unitary concept being employed to account for all the differences between the works of art — i.e., it is either aesthetically pleasing or it is not pleasing. The Notre Dame study analyzed the preferences expressed by college students for a wide variety of modern art. These preferences were analyzed into a series of independent subscales; that is, the standard "like" or "do not like" groups were broken into defined subgroups using a standardized computer program procedure. Thus the availability of the computer and computer technology makes possible a more complex and perhaps more realistic description.

It would appear from the Notre Dame study that the identified dimensions do not offer clear divisions between paintings as logically categorized by style, or by artist. Apparently, however, there is an interaction of style, content, color, and clarity to define each dimension. Previous studies have been able to identify only a single bipolar category or dichotomous reaction to the paintings. This study, through computer analysis, has been able to identify five groups that are, in essence, breakdowns of the previous dichotomous reactions. The five identifiable groups are labeled, for convenience, as follows:

1. *Structured realism:* highly representational paintings and photographic-type art.
2. *Primitive-analytic cubism:* paintings that severely tax a person's ability to identify the original theme of the painting.
3. *Synthetic cubism:* the use of angular marks to create an appearance of a person or an object.

[1]Dr. Eugene J. Loveless, Queensborough Community College, New York. This study is taken from: "*The Dimensions of Preference for Modern Art*," Proceedings, 76th Meeting of the American Psychological Association, 1968.

Chapter 15, pp. 171-75 in
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4. *Surrealism:* an amorphous fluid-type of distortion which permits specific details to become exaggerated.
5. *Expressionism:* the accentuation of one particular color, modality, form, or other facet, to obtain a desired effect.

Thus, the implication clearly appears to be in support of a more complex concept of artistic perception than is currently available even when a relatively small number of works of art (160) and artists (3) are studied.

The identification of the components of artistic preferences is made clear by the specification of the underlying characteristics that contribute to these judgments. These characteristics are complexly interwoven into each picture so that classifying art on a single dimension makes it difficult to deduce psychologically meaningful implications from these works. The computer analysis has helped to isolate each dimension so that pure forms may be identified and applied in psychological research.

The approach

Studies which seek to employ works of art as measures of individual variation require a few statistical control procedures. These are relatively easy to master and to administer. The computer programs necessary to successfully complete such work are also available.[2] The first question that comes to mind concerns the method of response. The University of Notre Dame study illustrated here used the "like" or "do not like" dimension. This simple dichotomy of responses is the broadest and most comprehensive category that may be employed in studies which use artistic materials as data. On the Hollerith card the data would appear as 1 for like, and an 0 for dislike. Conceptually each card column would represent a picture, with the individual's response to each picture coded into the appropriate column as a 1 or an 0. The usual method for this is to have the answer written or inserted into a preprinted form, with the data subsequently keypunched onto the Hollerith card.

The reason for recording each response is twofold. In the first place, it is important, for the psychologist's work, to know how frequently the general public likes or does not like a given work of art. This constitutes the "level of endorsement" for a work. After a given picture or group of pictures have been seen by a large number of subjects, the endorsement level will be measured by the percentage of the total that do like the picture. This endorsement level is usually obtained by a frequency-count computer program, normally available as a standardized program procedure.[3]

The second reason for recording and analyzing the data is that it becomes important to sort the artwork into different categories, based on style, content, author, or whatever characteristics are implied from a clear-cut objective and empirical basis. These objective categories are revealed by the application of factor analysis to the responses of people who like and dislike the pictures.

While it is not necessary to explain in detail this second phase or to explain how a factor analysis program operates, the following sentences may be useful in indicating something of the nature of factor analysis. It is sufficient to add that without the

[2]The most general program group would be the BMD group, cited in Chapter 9. See also: Hallworth and Brebner, *A System of Computer Programs* (British Psychological Society, London, England, 1967).

[3]See Chapter 9 for a discussion of the standardized program procedure for single-column frequency count.

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computer this kind of analysis (even on the small number of pictures and artists), would not be practicable.

Factor analysis is a statistical technique for breaking down an intercorrelation matrix (table) among the major abilities, dimensions, or components which contribute to each correlation coefficient. In the case of the art, the like or dislike responses showed systematic relations among the five groups of pictures (realistic, surrealistic, etc.). The relative clarity or purity of each style was represented as a coefficient between each picture and the factor representing that style. These coefficients are referred to as factor loadings and are considered to be meaningful when they are greater than 0.30 (as a rule of thumb). Each factor then reflects a linear description of the most representative pictures (based on the empirical analysis), in the order of the saturation of each picture on that factor.

In order to understand the idea of factor analysis, one must first consider correlation. Basically, the correlation between two variables is an index of the degree to which they are associated. For example, the degree of correlation between two pictures from the study is an index of the extent to which people who like one picture also like the other. If all the people who like one picture also like the other, the correlation between the pictures is perfect and the value is 1.00. If none of the people who like the one picture like the other, the correlation is zero.

The basic material for factor analysis is a correlation matrix as shown in Figure 15-1, below. In the correlation matrix the correlation (association) between each picture (or variable) and every other picture (or every other variable) is represented. The matrix illustrated below is a hypothetical matrix for illustration.

The diagonal (Cells 1,1; 2,2; 3,3; 4,4; 5,5) contains the correlation coefficients between each picture and itself; thus, all the diagonal values equal 1.00. Since the matrix is a square, all the information above the diagonal is repeated below the diagonal. A correlation matrix contains a series of values, and each value relates to only two of the variables (in this study, pictures), involved. If the matrix is a large

PICTURES	1	2	3	4	5
1	1.00	.90	.15	.09	.95
2	.90	1.00	.25	.10	.85
3	.15	.25	1.00	.80	.17
4	.09	.10	.80	1.00	.21
5	.95	.85	.17	.21	1.00

FIGURE 15-1. Intercorrelation matrix.

one — e.g., 160 by 160 — it may be very difficult to interpret the matrix by inspection.

An early attempt at a sort of factor analysis consisted of analyzing a correlation matrix into a set of *clusters*. A cluster is defined, for our purposes, as a set of variables (pictures) which are highly correlated with each other, and which tend not to be correlated with other variables (with variables in other clusters). If it is possible to analyze a matrix containing, for example, 100 variables into a set of 10 clusters, it is reasonable to assume that the relationships expressed in the matrix are due to no more than 10 basic and relatively independent influences or factors. The nature of each factor can be determined, roughly, by examining the variables that comprise the cluster.

The matrix shown in Figure 15-1 contains two clusters. Note that the correlation between Pictures 1 and 2 is 0.90, the correlation between 1 and 5 is 0.95, and the correlation between 2 and 5 is 0.85. Since these pictures are correlated with each other and not highly correlated with other pictures, they comprise a cluster as defined above. The other cluster consists of Pictures 3 and 4, since they are highly correlated with each other and not with Pictures 1, 2, and 5.

Factor analysis is much more sophisticated than cluster analysis, but the results of a factor analysis can be interpreted in a similar manner. The results of a factor analysis are typically presented as a factor matrix in which the rows represent variables, and the columns represent factors. The entries in the cells of the factor matrix are called loadings, and a given loading can be seen as representing the correlation between a factor and a variable. Thus the nature of a factor can be determined by examining the variables that have high loadings on that factor.

Table 15-1 is illustrative of the two tests used in evaluating the reactions to the pictures. The table shows 25 of the 160 pictures as an illustration. As suggested in the table, the number of artists represented was small in order to minimize the effect of personal stylistic variables. Picasso was the basic artist because of his range of styles. Mondrian pictures were included in the structured realism group. Van Gogh pictures were included in the expressionist group. Each artist was included on an *a priori* basis because they appeared to represent psychologically meaningful dimensions of art. In consultation with a resident artist the pictures were grouped into sixteen groups. These sixteen groups included the five shown above but were more detailed. The factor analysis program reflected only the five factors or groupings, perhaps reflecting the differences when professionals and laymen regard artworks.

Table 15-1 shows the title and the painter for each of the pictures. The Factor No. (I, II, III, IV, or V) indicates the factor into which this picture was classified by the factor analysis program. Loading is defined as the amount of commonality between/among items in one factor with some trait in common and identifiable from other factors or groupings in the same matrix. In looking at the column *loading*, any value over 30 represents a commonly accepted standard for inclusion within a factor and uniqueness of that factor as compared with other factors. The final column simply shows the percent of total viewers that liked each picture — i.e., the level of endorsement.

The data set

The pictures were projected from color slides before two separate groups and were presented to 30 to 35 viewers at a time. The first subgroup viewing the pictures represented 600 students at several colleges throughout the United States. These

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TABLE 15-1. Paintings, factor loadings, and preference levels for artworks

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Eugene J. Loveless, "Dimensions of Preference for Modern Art," *Proceedings of the 76th Annual Convention of the American Psychological Association*, 3 (1968), pp. 445–446, reproduced by permission.

students were primarily from psychology and education departments. The students responded on optical scan sheets for each picture. The scan sheets were converted to Hollerith cards for analysis. Use of a single-column frequency-count program provided the information for Column 5 of Table 15-1.

A second subgroup represented students from a private nonsectarian college in a major metropolitan area who were taking their first psychology course. This group constituted 193 viewers. These persons responded as did the first group, and the resulting cards were subjected to the BMD factor analysis program (Chapter 9). The results of the analysis are shown in columns 3 and 4 of Table 15-1.

Conclusions

Whatever method of external validation is to be used, the materials originally selected *a priori* have now been established to have constituent subgroups or subscales. These represent empirically established dimensions of artistic preference. The pruning and selection of the most potent and independent representatives of each subscale provides rapid and dependable materials for further application and validation procedures on any equivalent population.

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Appendix D

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DIMENSIONS OF PREFERENCE FOR MODERN ART

EUGENE LOVELESS
University of Notre Dame

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Appendix E

List of Measures and Subscales Utilized in this Study

Guilford Tests of Divergent Thinking

1. Uses for things
   a) total uses b) clever uses
2. Expressional Fluency Scores - Total Score
3. Plot Titles
   a) Total titles b) clever titles
4. Possible Jobs - Total Number of jobs

Scholastic Aptitude Test (SAT)
- a) Verbal score
- b) Quantitative - Mathematical Score

Oberlin Art Test - Sum of relevant art questions from A, B, C, and D Forms of the test

A. C. E. Test of Critical Thinking

Thurston's Concealed Figures Test (Spatial Ability)
- a) Number of correct responses
- b) Percentage correct
- c) Last item attempted

Color Word Test - (Stroop)
- a) Individual administration
  1. Words alone
  2. Colors alone
  3. Interference score corrected for initial reading speed by a regression method.
- b) Group Administration
  1. Colors alone
  2. Interference procedure

Schematizing Test
- a) Lag score
- b) Error score

Complexity Scores (Bieri "Rep" Test)
- a) Vertical Complexity - across categories
- b) Horizontal Complexity - within categories

Size Estimation Test - Error Score

Budner Scale for Tolerance/Intolerance for Ambiguity

Gough Rigidity Scale

Holland Preconscious Activity Scale

Rosenberg's Measure of Self-Esteem

Rotter's Internal/External Scale of Social Reinforcement

Barron's Ego Strength Scale (M M P I)

Revised Art Scale - Barron-Welsh Figure Preference Test

Rokeach Social Attitudes Scales
- a) Dogmatism
- b) Opinionation

Holtzman Inkblot Test - Computer Scored

1. Location
2. Rejection
3. Form Definiteness
4. Color
5. Shading
6. Movement
7. Integration
8. Human
9. Animal
10. Anatomy
11. Sex
12. Abstract
13. Anxiety
14. Hostility
15. Barrier
16. Penetration
17. Popular

Omnibus Personality Test - (Heist etal.)

1. Anxiety Level
2. Altruism
3. Autonomy
4. Complexity
5. Estheticism
6. Impulse Expression
7. Masculinity - Femininity
8. Personal Integration
9. Practicality
10. Religious Orientation
11. Response Bias
12. Social Extroversion
13. Thinking Introversion
14. Theoretical Orientation

Harvey's Conceptual Systems Test (Objective Form)

1. Divine Fate Control
2. Need for Simplicity / Consistency
3. Moral Absolutism
4. Need for Structure / Order
5. Need to Help People
6. Need for People
7. Interpersonal Aggression
8. Anomie
9. Abstractness

Personality Research Form - (Jackson)

A.

1. Abasement
2. Change
3. Cognitive Structure
4. Dependence
5. Sentience
6. Succorance
7. Desirability

B.

1. Achievement
2. Affiliation
3. Aggression
4. Autonomy
5. Dominance
6. Endurance
7. Exhibition
8. Harm-avoidance
9. Impulsivity
10. Nurturance
11. Order
12. Play
13. Social Recognition
14. Understanding
15. Infrequency

Appendix F

Tables of Correlations

1. Correlation of Forced Choice Art Preference Test with Personality, Cognitive Styles and Divergent Thinking Tests.

2. Correlation of Forced Choice Art Preference Test with Cognitive Styles and a Divergent Thinking Test.

3. Correlation of Art Test Scores in Forced Choice Format with Barron-Welsh Art Scale and Holland Preconscious Thinking Scale, (Architecture students).

4. Correlation of F C A P T with Computer Scored Results of Holtzman Ink Blot Test (H.I.T.).

5. Correlation of F C A P T with Cognitive Style and Personality Measures.

6. Correlation of Free Choice Version of the Art Preference Test with Scales of O. J. Harvey's Test of Conceptual Styles.

7. Intercorrelations and Scales on the Forced Choice (F C A P T) Version of the Art Preference Test and the Free Choice Version of the Test Utilizing the Same Pictures.

8. Correlation of Free Choice Art Preferences with Two Cognitive Style Measures.

9. Correlation of Barron-Welsh Figure Preference Test, Holland Preconscious Thinking, A.C.E. Test of Critical Thinking and the Scales of the Art Preference Test (Free Choice Format).

TABLE 1

Correlation of Forced Choice Art Preference Test with
Personality, Cognitive Styles and Divergent Thinking Tests

N=44 P>05=.29 P>.01=.38

Negative Correlations are underlined

Criteria Art	Uses for Things: Total Uses	Uses for Things: Clever Uses	Exp. Fluency	Plot Titles: Total	Plot Titles: Clever	Object Sort Test: Groups	Object Sort Test: Singles	Object Sort Test: Total	Ego Strength	EWFPT
1A	09	11	10	03	01	12	06	08	07	09
1B	13	16	09	22	06	19	02	07	06	03
1C	13	14	08	07	07	16	16	19	03	14
1D	16	14	10	10	18	12	04	07	05	24
1E	14	16	05	07	10	16	15	16	03	01
2A	05	04	04	07	07	19	08	04	10	16
2B	03	04	08	02	13	07	20	18	16	06
2C	12	14	05	08	16	14	19	16	01	05
2D	02	03	02	02	13	14	04	08	05	03
2E	01	02	20	11	08	02	05	07	01	11

(Con'd.)

TABLE 1 (Cont'd.)

Correlation of Forced Choice Art Preference Test with
Personality, Cognitive Styles and Divergent Thinking Tests

N=44 P>05= 29 P>.01=38

Negative Correlations are underlined

Criteria Art	Oberlin Art Test	Bieri Rep.V	Bieri Rep.H	Anx. Level	Altruism	Auton.	Complex	Esthet.	Imp.Exp.	M./F.
1A	28	04	11	02	13	04	21	37	05	08
1B	25	05	14	17	13	05	20	28	14	09
1C	30	09	04	06	08	05	17	33	11	08
1D	09	30	19	19	21	03	19	14	19	21
1E	23	04	03	03	18	10	28	38	05	02
2A	28	09	01	02	04	12	28	50	09	05
2B	38	01	06	03	11	12	24	50	02	10
2C	30	06	12	08	20	05	19	29	06	04
2D	11	08	03	18	08	03	15	37	16	14
2E	24	03	06	01	22	02	27	16	12	06

(Cont'd.)

TABLE 1 (Cont'd.)

Correlation of Forced Choice Art Preference Test with Personality, Cognitive Styles and Divergent Thinking Tests

N=44 P>05= 29 P>.01= 38

Negative Correlations are underlined

Criteria Art	Pers.Int	Prac.Or	Relig.Or	Resp.Bias	Soc.Ext	Th.Int
1A	03	09	04	11	01	28
1B	08	08	10	19	07	28
1C	05	03	01	13	00	24
1D	13	02	04	16	11	17
1E	01	06	12	16	04	31
2A	08	03	11	05	01	25
2B	09	00	17	15	02	29
2C	07	12	10	11	05	38
2D	03	08	08	19	06	29
2E	11	25	10	18	04	23

	Theor.Or	CEEBV	CEEBQ	Rokeach Opin.	Rokeach Dog.	Budner TIA
1A	01	38	07	05	15	04
1B	04	35	01	07	00	08
1C	03	13	34	12	08	02
1D	13	31	19	02	04	06
1E	06	42	22	06	02	00
2A	13	29	31	03	04	07
2B	00	24	32	02	04	04
2C	08	11	11	05	05	15
2D	02	32	29	08	08	00
2E	02	18	25	12	26	16

TABLE II

Correlation of Forced Choice Art Preference Test with Cognitive Styles and a Divergent Thinking Test

Number of Subjects		Significance Levels	
Variables 1 - 14	126	P>.05=17	P>.01=22
15 - 21	54	P>.05=26	P>.01=34
22 - 23	68	P>.05=23	P>.01=30

Negative Correlations are underlined

	Possible Jobs	Concealed Figures Test Rts	Tried	O/O Rt.	Color Word Test Colors	Colors	≤Colors
1A	22	07	01	03	03	04	04
1B	20	21	06	15	36	22	32
1C	03	02	10	12	23	16	22
1D	06	10	07	05	02	09	06
1E	15	10	17	02	10	08	01
2A	11	10	07	11	33	27	33
2B	22	35	22	15	45	34	44
2C	11	11	10	32	36	34	39
2D	22	14	11	21	10	10	11
2E	02	26	15	22	22	06	16

	Color Word Test Intef.	Intef.	≤Intef.	Size Est.	Schematizing Test Lag	Error
1A	07	02	05	01	35	21
1B	00	10	04	23	12	14
1C	02	18	09	10	01	12
1D	15	10	13	10	03	03
1E	29	23	28	30	27	07
2A	28	22	26	00	12	22
2B	02	09	02	41	07	04
2C	12	03	09	24	10	05
2D	13	02	10	01	05	34
2E	07	04	01	15	02	03

TABLE III

Architecture Students

Correlation of Art Test Scores in Forced Choice Format
with Barron-Welsh Art Scale and Holland Preconscious Thinking Scale.

N=33 P>.05= 35 P>.01= 45

	EWFPT	HFCS
1A	16	41
1B	05	32
1C	19	60
1D	27	17
1E	06	32
2A	03	31
2B	21	44
2C	24	42
2D	23	33
2E	27	17

TABLE IV

Correlation of F C A P T with Computer Scored results of Holtzman Ink Blot test.(HIT)

N=96 P>.05= 20 P>.01= 26

	Resp.(N)	Locat.	Reject	Form def.	Color	Shade
1A	07	01	00	17	13	06
1B	03	26	00	05	35	13
1C	14	07	00	29	03	04
1D	02	03	00	01	21	12
1E	05	16	00	06	03	23
2A	09	06	00	09	27	23
2B	15	10	00	00	26	03
2C	05	02	00	03	08	05
2D	24	13	00	13	41	24
2E	04	00	00	01	01	05

	Move	Integ.	Human	Animal	Anat.	Sex
1A	02	07	17	12	21	13
1B	09	00	04	14	02	20
1C	14	20	16	19	13	05
1D	04	16	03	19	01	00
1E	02	02	00	02	05	18
2A	06	06	06	07	06	10
2B	02	04	16	07	13	04
2C	11	04	18	16	25	02
2D	16	17	06	11	07	15
2E	10	12	09	04	15	07

	Abstr.	Anx.	Hostile	Barrier	Penet.	Pop.
1A	08	12	05	09	23	12
1B	20	08	25	09	06	16
1C	16	07	16	15	18	20
1D	07	00	07	18	04	10
1E	12	16	02	01	09	27
2A	01	01	04	00	13	16
2B	07	08	04	03	12	00
2C	22	26	27	07	24	12
2D	30	22	35	01	03	06
2E	03	02	06	13	03	22

TABLE V

Correlation of F C A P T with Cognitive Style and Personality Measures

N=75 P>.05= 22 P>.01=29

	Rosenberg Self-Esteem	Gough Rigidity	Budner Tol/Int Ambiguity	Rotter I/E	Group Obj. Sort Test OST Groups	OST Singles	OST Total
1	16	29	13	02	15	04	05
2	24	11	22	22	38	03	23
3	20	33	39	02	36	11	11
4	06	11	17	10	06	00	03
5	32	03	18	15	13	16	19
6	11	09	11	14	00	00	00
7	21	25	25	15	16	14	20
8	05	24	29	19	15	06	03
9	21	05	05	09	07	00	03
10	05	03	06	13	11	23	12

	Personality Research Form - Jackson						
	Abase.	Change	Cog.Struc.	Depend.	Sent.	Succor.	Desire.
1	25	18	08	15	30	03	03
2	06	16	23	18	07	05	11
3	17	06	19	14	04	01	06
4	09	09	15	16	05	17	05
5	08	23	00	07	20	07	12
6	19	13	03	13	36	06	06
7	02	09	04	08	11	15	01
8	22	31	06	21	31	03	25
9	02	02	06	07	18	19	12
10	10	12	08	02	09	06	23

TABLE VI

Correlation of Free Choice Version of the Art Preference Test with scales of O.J. Harvey's test of conceptual styles.

N=70 P>.05= 23 P>.01= 30

	Divine Fate Control	Need Simplicity Consis.	Moral absolute	Need struct. /Order	Need to help People	Need for people	Intep. aggres-sion	anomie	abstract-ness
1	05	10	10	02	17	01	14	13	02
2	12	27	09	09	01	22	14	01	08
3	09	01	21	15	03	19	09	10	19
4	15	03	09	13	20	06	24	32	14
5	11	21	10	01	03	16	15	01	10
6	08	17	01	13	25	10	01	26	07
7	19	07	07	20	17	05	08	17	20
8	02	15	00	04	18	12	06	07	00
9	08	09	09	09	23	11	13	09	03
10	01	01	01	09	07	13	00	02	00

TABLE VII

Intercorrelations and Scales on the Forced Choice (F C A P T) Version of the Art Preference Test and the Free Choice Version of the Test Utilizing the same Pictures. *

N=105 for forced choice (above diagonal)

N=80 for free choice (below diagonal)

FORCED CHOICE

		1A	1B	1C	1D	1E	2A	2B	2C	2D	2E
F											
R	1A	83	04	01	00	02	01	08	.06	05	00
E	1B	51	56	58	74	17	71	63	71	62	50
E	1C	38	38	61	72	25	83	59	61	64	69
	1D	17	37	15	67	15	80	66	76	76	60
C	1E	69	84	32	19	71	21	18	23	21	24
H	2A	76	56	37	11	66	81	70	81	81	73
O	2B	79	56	56	16	66	72	62	73	78	62
I	2C	75	59	36	13	72	82	73	65	83	67
C	2D	55	52	19	20	55	57	45	47	62	70
E	2E	44	37	22	09	47	47	49	55	41	68

* Kuder-Richardson formula 20 reliability coefficients for the forced choice items appear in the diagonal.

TABLE VIII

Correlation of Free Choice Art Preferences
with Two Cognitive Style Measures.

N=104 P>.05=19 P>.01=25

	Concealed Figures Test			Color Word Test			
	No. Rt.	% Rt.	No. Tried	Colors		Interference	
	1	2	3	1	2	1	2
1	14	09	05	19	28	06	05
2	19	10	07	38	35	08	17
3	09	03	08	10	08	04	06
4	11	12	04	40	23	01	13
5	21	09	15	28	37	04	12
6	16	13	04	27	31	04	16
7	12	03	10	17	26	05	19
8	13	10	03	37	42	12	15
9	15	14	01	26	18	03	00
10	24	07	20	24	26	12	00

TABLE IX

Correlation of Barron-Welsh Figure Preference Test, Holland Preconscious Thinking, A.C.E. Test of Critical Thinking and the Scales of the Art Preference Test (Free Choice Format)

N=89 P .05= 21 P .01= 28

	Barron-Welsh Art.Scale	Holland P C S	A. C. E. Crit.Think.
1	23	26	02
2	72	87	49
3	63	50	40
4	76	61	49
5	69	59	50
6	60	63	45
7	57	53	28
8	13	34	05
9	55	52	32
10	19	05	07

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